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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,199	12/11/2003	Yi-Jing Leu	SUND 321C1	5992

23995 7590 01/10/2005

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WASHINGTON, DC 20005

EXAMINER

NGUYEN, DONGHAI D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/733,199

Applicant(s)

LEU ET AL.

Examiner

Donghai D. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 10/128,354.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/11/03; 6/20/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. The status of the related application 10/128,354 should have been updated, i.e. the phrase "2002, pending" should be --2002, now US Patent No. 6,735,865--.

### ***Claim Objections***

2. Claim 16 is objected to because of the following informalities: the phrase "about 150 ? for" (line 2) should be changed to --about 150° C for--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not know how the "photo-polymer layer has holes form therein" (claim 1, line 6) after it's being filled between the conductive traces. Please clarify.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-10, 13, and 15-16 are as best understood, rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,709,979 to Casson et al

Regarding claims 1-4, Casson et al disclose a method of forming a flexible circuit board, comprising: providing an insulation tape (flexible substrate 20 is made of polyimides see Col. 1, lines 36-38); forming conductive traces (32) on the insulation tape; and after the conductive traces are formed on the insulation tape, forming a photo-polymer layer (40) that fills between the conductive traces (Fig. 1c), wherein the photo-polymer layer has holes (apertures 42) formed therein so that parts of the conductive traces are not covered by the photo-polymer layer to form a plurality of uncovered contacts (32) that are exposed by the holes. It is noted that the “for ink jet” as cited in the preamble is intended use, and the product formed by Casson et al is capable of using as printed circuit board for ink jet.

Regarding claims 5-8, Casson et al disclose the forming the conductive traces comprises of: forming an adhesive layer on the insulation tape; adhering a conductive layer on the adhesive layer (Col 5, lines 44-47); and defining the pattern of the conductive layer to form the conductive traces (Col. 5, lines 28-31); a material of the conductive layer is copper or gold and about 10  $\mu\text{m}$  to 50  $\mu\text{m}$  (Col. 5, lines 12-15).

Regarding claims 9 and 10, Casson et al disclose forming the photo-polymer layer by coating (Col. 6, lines 5-8).

Regarding claims 13, 15, and 16, Casson et al discloses the step of forming the photo-polymer layer by coating, exposing to an exposure energy of about 280-429  $\text{mJ}/\text{cm}^2$ , developing

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and post-curing at a hot air convention oven at about 150 °C for about 50 min. (Col. 4, lines 34-46).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 11, 12, and 14 are as best understood, rejected under 35 U.S.C. 103(a) as being unpatentable over Casson et al.

Regarding claims 11 and 12, the limitation recites: “photo-polymer is made of solder mask” and “polyimide” (see claims 11 and 12, lines 1-2). It would have been an obvious matter of design choice to choose flexible material or solder mask as photo-polymer layer, since Applicants have not disclosed that the claimed polyimides and solder mask would solve a stated problem over the conventional PCB such as photoimageable dielectric material and it appears that the invention would perform equally well with the teaching of PID material of Casson et al.

Regarding claim 14, photo-polymer for making of solder mask is old and well known in the art. Therefore it would have been an obvious to one having ordinary skill in the art at the time the invention was made to apply the photo-polymer having configuration as agent and hardener in order to form a desired structure element which meets many requirement.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art references cited for their teaching of method for making printed circuit board or the like.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (571)-272-4566. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (571)-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN  
January 6, 2005

  
MINH TRINH  
PRIMARY EXAMINER 1/6/05